

AMENDMENTS TO THE DRAWINGS

The attached "Replacement Sheet" of drawings includes changes to the Figure. The attached "Replacement Sheet," which includes the Figure replaces the original sheet.

Attachment: Replacement Sheet(s)

REMARKS

Applicants have carefully reviewed the Examiner's objections, rejections and comments in the Office Action of November 4, 2005 and have prepared the following response.

Claims 9-19 and 21 remain pending in this application. Claims 1, 8 and 20 were canceled by a previous amendment. By this paper, claims 2-8 have been canceled, and claim 21 has been amended, and all pending claims are believed to be in condition for allowance. In addition, the FIGURE has been amended in accordance with the Examiner's suggestions. No new matter has been added by virtue of this amendment.

Turning now to the issues raised in the Office Action, the FIGURE is objected to by the Examiner. Specifically, the Examiner notes that reference box 30 should be labeled "Interface Circuitry", reference character 28 was used to designate both a "transducer" and a "fuel level output signal", and reference numeral 34 does not appear within the drawing figure. As indicated in the attached "Replacement Sheet", Applicants have remedied these issues, first by the placement of the label "Interface Circuitry" in box 30, and second by striking the inadvertent second occurrence of reference numeral 28 and replacing it with the correct numeral 34. The Replacement Sheet is believed to remedy the stated objections.

Claims 2-3 and 5-7 stand rejected under 35 USC § 103(a) as unpatentable over Mizuguchi et al. (Japanese Patent No. JP 55-69024, hereinafter "Mizuguchi") in view of Rossman (U.S. Patent No. 5184510, hereinafter "Rossman"). Claim 4 stands rejected under 35 USC § 103(a) as unpatentable over Mizuguchi in view of Rossman, and further in view of *In re Leshin*. Claims 9-11 and 15-19 stand rejected under 35 USC § 103(a) as being unpatentable over Mizuguchi in view of Rossman and Nishida et al.

(U.S. Patent No. 4627283, hereinafter "Nishida"). Claim 12 stands rejected under 35 USC § 103(a) as being unpatentable over Mizuguchi in view of Rossman and Nishida, and further in view of *In re Leshin*. Claim 13 stands rejected under 35 USC § 103(a) as being unpatentable over Mizuguchi in view of Rossman and Nishida, and further in view of Steiner (U.S. Patent No. 5483831, hereinafter "Steiner I"). Claim 14 stands rejected under 35 USC § 103(a) as being unpatentable over Mizuguchi in view of Rossman, Murphy et al. (U.S. Patent No. 6523404, hereinafter "Murphy"), and Steiner (U.S. Patent No. 5299456, hereinafter "Steiner II"). Finally, claim 21 stands rejected under 35 USC § 103(a) as being unpatentable over Mizuguchi in view of Rossman and Hennequin et al. (French Patent No. 2656688, hereinafter "Hennequin"). Applicants respectfully traverse each of the stated rejections, and respectfully request reconsideration in view of the above amendments and following remarks.

With respect to claim 9, the Examiner states that Mizuguchi discloses a liquid level meter comprising an acoustic/ultrasonic transducer, a float having a reflective portion for reflecting the acoustic signal, and circuitry means for collecting the reflected signals and determining the liquid level. However, the Examiner admits that neither Mizuguchi nor Rossman teach a centering rod. The Examiner nevertheless maintains that Nishida teaches a strut 5 loosely fitted with a float 9 having a permanent magnet 8 and a plurality of reed switches 10; the assembly is connected to an electrical circuit, and the fuel level is determined by measuring the relative change in resistance as the float travels along the reed switches. (Nishida, col. 3, 44 – col. 4, 25).

Here, the Examiner provides no motivation to combine the teachings of Nishida with Mizuguchi and Rossman. Applicants aver that the strut of Nishida is not used in

connection with an ultrasonic sensor, but rather used to house the series of reed switches. Applicants further aver that there is no motivation to combine the use of a strut/housing for reed switches with a float and ultrasonic sensor in order to provide a centering rod. Therefore, Applicants aver that there is no motivation to combine the cited references, and the remaining references fail to disclose all the limitations of claim 9, which is believed to be patentably distinguishable over the prior art. Furthermore, Applicants aver that the Examiner has engaged in impermissible hindsight reconstruction, using Applicants' disclosure as a blueprint for combining the cited references. Therefore, claim 9 is believed to be in condition for allowance.

With respect to claim 14, the Examiner states that Mizuguchi discloses a liquid level meter comprising an acoustic/ultrasonic transducer, a float having a reflective portion for reflecting the acoustic signal, and circuitry means for collecting the reflected signals and determining the liquid level. However, the Examiner admits that neither Mizuguchi nor Rossman teach a centering rod. The Examiner nevertheless maintains that Murphy teaches a rod 108 extending from a housing 102 defining a travel path for a float 112. The float 112 is connected to an elongate flexible member 114 that is connected at another end to a spool, the rotation of which is translated into the fuel level. (Murphy, Col. 2, 57-67 and Col. 9, 44-50). The Examiner further maintains that Steiner II teaches an electronic dipstick for an oil sump with a float 18 having dimples 42 to "reduce friction between the float 19 and the centre tube 54." (Steiner II, Col. 4, 43-47).

Here, the Examiner provides no motivation to combine the teachings of Mizuguchi and Nishida with Murphy and Steiner II. With respect to Murphy, Applicants

aver that the rod is not used in connection with an ultrasonic sensor, but rather used in connection with a rotatable spool. With respect to Steiner II, Applicants aver that the dimples are not used in connection with an ultrasonic sensor, but rather used in connection with a pair of reed switches that merely provide indication of whether an oil sump is full or empty. Therefore, Applicants aver that there is no motivation to combine the cited references, and the remaining references fail to disclose all the limitations of claim 14, which is likewise believed to be patentably distinguishable over the prior art. Furthermore, with respect to the combination of the four references, Applicants aver that the Examiner has engaged in impermissible hindsight reconstruction, using Applicants' disclosure as a blueprint for combining the cited references. Therefore, Applicants aver that claim 14 is in condition for allowance.

With respect to claim 21, the Examiner states that Mizuguchi discloses a liquid level meter comprising an acoustic/ultrasonic transducer, a float having a reflective portion for reflecting the acoustic signal, and circuitry means for collecting the reflected signals and determining the liquid level. However, as currently amended, there is provided a method for measuring the level of fuel in a fuel tank comprising "a parabolic surface for reflecting said acoustic wave *toward said fixed transducer.*" (Emphasis added). Applicants aver that no reference or combination of references cited by the Examiner teaches this limitation. Specifically, Hennequin discloses "a concave mirror 90, mounted on the float 9, reflects the vertical light beam 51 and thus generates a substantially horizontal light beam 52." (Hennequin, Abstract; Figure 1) (emphasis added). In addition, Mizuguchi teaches a "reflection part 16 ... in which the top is at a right angle." (Mizuguchi, Abstract; Figure 5) (emphasis added). Finally, Rossman

teaches that the acoustical wave reflects from a sphere 10 floating on the surface 21 of liquid 20. (Rossman, Col. 2, 43-63; Figure 1) (emphasis added). The cited references therefore do not teach the claimed invention, and claim 21 is believed to be patentably distinguishable over the prior art.


Applicants further aver that there is no motivation to combine the cited references. Specifically, Hennequin is directed to a system whereby the position of a horizontal light beam 52 is used to determine the amount of liquid left in a tank. (Hennequin, Abstract). Applicants aver that one skilled in the art of ultrasonic transducers that both transmit toward and receive a reflected signal from a parabolic surface would not be motivated by a reference that teaches reflecting a signal in a direction 90 degrees away from the direction of reflection in the desired application. Therefore, Hennequin teaches away from the proposed combination, and the remaining references fail to disclose all the limitations of claim 21, which is believed to be patentably distinguishable over the prior art.

With respect to the remaining dependent claims, without conceding the Examiner's position, Applicants aver that claims 10-13 are allowable based on the dependency from claim 9, and claims 15-19 are allowable based on the dependency from claim 14.

From the foregoing, Applicants submit that the remaining claims in this patent application are now in condition for allowance. Accordingly, reconsideration of the claims and passage of the application to issue are courteously requested. If a telephone conference would expedite allowance or resolve any further questions, such a conference with the undersigned is invited at the convenience of the Examiner.

Respectfully submitted,

Dated: 1/30/06

By: 
Ralph E. Smith, Reg. No. 35,474
CIMS 483-02-19
DaimlerChrysler Intellectual Capital Company
DaimlerChrysler Technology Center
800 Chrysler Drive
Auburn Hills, MI 48326-2757
248-944-6519

Attorney for Applicants